

Application No. 10/064,791
Docket No. 13DV-13975
Amendment dated February 4, 2004
Reply to Office Action of November 4, 2003

Amendments to the Specification:

Please replace the title of the invention at page 1 with the following amended title:

THERMALLY-STABILIZED THERMAL BARRIER COATING
AND PROCESS THEREFOR

Please replace paragraph [0006] with the following amended paragraph:

[0006] In commonly-assigned U.S. Patent No. 6,492,038 ~~Application~~
~~Serial No. [Attorney Docket No. 13DV-13322]~~ to Rigney et al., a more
thermally-stable TBC is achieved by inhibiting grain growth (coarsening),
sintering, and pore redistribution (the coalescence or coarsening of smaller
pores to form larger pores) during high temperature excursions. According
to Rigney et al., resistance to heat transfer through a TBC is determined in
part by the amount of microstructural defects within the grains of the TBC.
Rigney et al. teach that such defects can be created by composition-induced
defect reactions and process-induced porosity, the former of which includes
vacancies that result from the need in ionic solids to maintain charge
neutrality, as is the case in YSZ where substitution of zirconia (ZrO_2) with

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yttria (Y_2O_3) in the lattice yields a vacancy. On the other hand, process-induced porosity includes pore formation that occurs during coating as a component is rotated relative to the deposition source. A primary example is the "sunrise-sunset" vapor-surface mechanisms that occur during rotation of a component during deposition of TBC from a vapor cloud, such as by PVD, the result of which is a textured growth of the deposit in which pores are formed between columns, within the columns, and between secondary growth arms contained within the columns.